What is claimed is:

1. A method for producing a cathode active material, comprising the steps of:

(a) mixing a silver-containing compound with a vanadium-containing compound to form a reaction mixture;

(b) heating the reaction mixture in a reduced oxygen atmosphere to produce the cathode active material.

2. The method of claim 1 wherein the cathode active material comprises γ-phase SVO, ε-phase SVO and elemental silver.

3. The method of claim 2 including providing the γ-phase silver vanadium oxide having the formula $Ag_{0.8}V_2O_{5.4}$ and the ε-phase SVO having the formula $Ag_2V_4O_{11}$.

4. The method of claim 1 including selecting the silver-containing compound from the group consisting of silver nitrate, silver lactate, silver triflate, silver pentafluoropropionate, silver laurate, silver myristate, silver palmitate, silver stearate, silver vanadate, silver oxide, silver carbonate, and mixtures thereof.

5. The method of claim 1 including selecting the vanadium-containing compound from the group consisting of NH_4VO_3, $AgVO_2$, V_2O_5, V_2O_4, V_6O_{13}, V_2O_3, and mixtures thereof.

6. The method of claim 1 including providing the silver-containing compound and the vanadium-containing compound in a mole ratio of about 1:2.

7. The method of claim 1 including providing the reduced oxygen atmosphere having an oxygen content of about 1% to about 10%.

8. The method of claim 1 including providing the cathode active material having about 30% to about 70% γ-phase SVO, about 30% to about 70% ε-phase SVO and about 1% to about 15% silver metal.

9. The method of claim 1 including heating the reaction mixture to at least one reaction temperature in a range from about 200°C. to about 550°C.

10. The method of claim 1 including heating the reaction mixture to at least one reaction temperature for about 30 minutes to about 30 hours.

11. The method of claim 1 including mixing the reaction mixture as it is being heated.

12. The method of claim 1 including subjecting the reaction mixture to a first reaction heating followed by a first mixing, then to a second reaction heating followed by a second mixing, and then to a third reaction heating.

13. The method of claim 12 including performing the first and second mixings at ambient.

14. The method of claim 1 including providing the first reaction heating at a first reaction temperature, the second reaction heating at at least a second and a third reaction temperatures, and the third reaction heating at a fourth reaction temperature, each subsequent reaction temperature being greater than the previous one.

15. A method for providing a cathode electrode, comprising the steps of:

(a) mixing a silver-containing compound with a vanadium-containing compound to form a reaction mixture;

(b) heating the reaction mixture in a reduced oxygen atmosphere to produce a cathode active material; and

(c) utilizing the electrode active material in a cathode electrode.

16. The method of claim 15 wherein the cathode active material comprises γ-phase SVO, ε-phase SVO and elemental silver.

17. The method of claim 15 including selecting the silver-containing compound from the group consisting of silver nitrate, silver lactate, silver triflate, silver pentafluoropropionate, silver laurate, silver myristate, silver palmitate, silver stearate, silver vanadate, silver oxide, silver carbonate, and mixtures thereof.

18. The method of claim 15 including selecting the vanadium-containing compound from the group consisting of NH_4VO_3, $AgVO_2$, V_2O_5, V_2O_4, V_6O_{13}, V_2O_3, and mixtures thereof.

19. The method of claim 15 including providing the reduced oxygen atmosphere having an oxygen content of about 1% to about 10%.

20. The method of claim 15 including providing the cathode active material having about 30% to about 70% γ-phase SVO, about 30% to about 70% ε-phase SVO and about 1% to about 15% silver metal.

21. The method of claim 15 including heating the reaction mixture to at least one reaction temperature in a range from about 200°C. to about 550°C.

22. The method of claim 15 including heating the reaction mixture to at least one reaction temperature for a period of about 30 minutes to about 30 hours.

23. The method of claim 15 wherein the step of utilizing the electrode active material to form the cathode electrode includes the addition of a binder and a conductive material.

24. The method of claim 23 wherein the cathode electrode further comprises about 0 to about 3 weight percent of a carbonaceous conductive additive, about 0 to about 3 weight percent of a fluoro-resin powder, and about 94 to about 99 weight percent of the electrode active material.

25. A cathode for an electrochemical cell, the cathode comprising a cathode active material characterized as having been prepared by heating a reaction mixture of a silver-containing compound mixed with a vanadium-containing compound in a reduced oxygen atmosphere.

26. The cathode of claim 25 wherein the cathode active material comprises γ-phase SVO, ε-phase SVO and elemental silver.

27. The cathode of claim 25 wherein the silver-containing compound is selected from the group consisting of silver nitrate, silver lactate, silver triflate, silver pentafluoropropionate, silver laurate, silver myristate, silver palmitate, silver stearate, silver vanadate, silver oxide, silver carbonate, and mixtures thereof.

28. The cathode of claim 25 wherein the vanadium-containing compound is selected from the group consisting of NH_4VO_3, $AgVO_2$, V_2O_5, V_2O_4, V_6O_{13}, V_2O_3, and mixtures thereof.

29. The cathode of claim 25 wherein the reduced oxygen atmosphere has an oxygen content of about 1% to about 10%.

30. The cathode of claim 25 wherein the cathode active material comprises about 30% to about 70% γ-phase SVO, about 30% to about 70% ε-phase SVO and about 1% to about 15% silver metal.

31. The cathode of claim 25 wherein the reaction mixture is heated to at least one reaction temperature in a range from about 200°C to about 550°C.

32. The cathode of claim 25 wherein the reaction mixture is heated to at least one reaction temperature for about 30 minutes to about 30 hours.

33. The cathode of claim 25 further comprising a binder and a conductive material.

34. A cathode for an electrochemical cell, the cathode comprising an electrode active material characterized as having been prepared by heating a reaction mixture of a silver-containing compound mixed with a vanadium-containing compound in a reduced oxygen atmosphere.

35. The cathode of claim 34 wherein the cathode active material comprises γ-phase SVO, ε-phase SVO and elemental silver.

36. The cathode of claim 34 wherein the silver-containing compound is selected from the group

consisting of silver nitrate, silver lactate, silver triflate, silver pentafluoropropionate, silver laurate, silver myristate, silver palmitate, silver stearate, silver vanadate, silver oxide, silver carbonate, and mixtures thereof.

37. The cathode of claim 34 wherein the vanadium-containing compound is selected from the group consisting of NH_4VO_3, $AgVO_2$, V_2O_5, V_2O_4, V_6O_{13}, V_2O_3, and mixtures thereof.

38. The cathode of claim 34 wherein the reduced oxygen atmosphere has an oxygen content of about 1% to about 10%.

39. The cathode of claim 34 wherein the cathode active material comprises about 30% to about 70% γ-phase SVO, about 30% to about 70% ε-phase SVO and about 1% to about 15% silver metal.

40. A nonaqueous electrochemical cell, comprising:

(a) an anode;

(b) a cathode comprising a cathode active material characterized as having been prepared by heating a reaction mixture of a silver-containing compound mixed with a vanadium-containing compound in a reduced oxygen atmosphere;

(c) a separator material electrically insulating the anode from the cathode; and

(d) a nonaqueous electrolyte activating the anode

and the cathode.

41. The electrochemical cell of claim 40 wherein the anode is comprised of lithium.

42. The electrochemical cell of claim 40 wherein the cathode active material comprises γ-phase SVO, ε-phase SVO and elemental silver.

43. The electrochemical cell of claim 40 wherein the silver-containing compound is selected from the group consisting of silver nitrate, silver lactate, silver triflate, silver pentafluoropropionate, silver laurate, silver myristate, silver palmitate, silver stearate, silver vanadate, silver oxide, silver carbonate, and mixtures thereof.

44. The electrochemical cell of claim 40 wherein the vanadium-containing compound is selected from the group consisting of NH_4VO_3, $AgVO_2$, V_2O_5, V_2O_4, V_6O_{13}, V_2O_3, and mixtures thereof.

45. The electrochemical cell of claim 40 wherein the reduced oxygen atmosphere is characterized as having had an oxygen content of about 1% to about 10%.

46. The electrochemical cell of claim 40 wherein the cathode active material comprises about 30% to about 70% γ-phase SVO, about 30% to about 70% ε-phase SVO and about 1% to about 15% silver metal.

47. The electrochemical cell of claim 40 wherein the reaction mixture is characterized as having been heated to at least one reaction temperature in a range from about 200°C. to about 550°C.

48. The electrochemical cell of claim 40 wherein the reaction mixture is characterized as having been heated to at least one reaction temperature for about 30 minutes to about 30 hours.